Proposed Final Version of the 2008 303(d) List

Summary of Public Comments and Departmental Responses

(Note: in some instances, public comments have been summarized in order to group similar observations by multiple reviewers.)

A. GENERAL COMMENTS: Review Process

Comment A-1. *At the meeting I attended, staff did not provide hand-outs for the watershed of interest to me, which made it difficult for me to review the document.*

Response: At the regional meetings, staff provided 303(d) pages for the local area Group 4 and 5 watersheds. Only these portions of the list were provided in order to save paper and focus on the watersheds that had been intensively reassessed in each local area. The document in its entirety was available on-line for review.

Comment A-2. *At the meeting I attended, senior managers of the Division of Water Pollution Control were not present.*

Response: At the regional meeting in question, three Division program managers with over 25 years of service each were present.

Comment A-3. *The public notice did not specifically state that threatened waters are included on the draft 303(d) List. Can this information be corrected and the notice redistributed?*

Response: The commenter is correct – threatened waters are appropriate for inclusion on the 303(d). However, we do not think that the omission of this information from the public notice is significant enough to warrant reissuance of the notice, since the purpose of the document is to alert the public to the opportunity to review the document, rather than to fully explain it. The 303(d) List document is clear that threatened waters are included.

Comment A-4. *For the 2008 draft 303(d) review, the division only held afternoon meetings. Citizens cannot conveniently attend afternoon public meetings.*

Response: In past review cycles, we held numerous evening meetings and found them to be generally poorly attended. The afternoon meetings this cycle were generally well attended.

Comment A-5. *The commenter requests an individual response to their concerns about the 303(d) List.*

Response: It would be impractical to provide an individual response to each commenter. Additionally, it would be unfair to the other reviewers of the list if they could not read and consider the department's responses to the issues raised by the other commenters.

At each of the regional meetings, staff were available immediately before and after the meeting to speak directly to commenters.

B. GENERAL COMMENTS: Assessment Methodologies

Comment B-1. *The commenter feels that it is important that the comments field of the list inform the public regarding improvements made in stream segments.*

Response: While we agree that it is important for the department to provide information to the public concerning the status of stream segments and any efforts to improve or restore them, the 303(d) is not necessarily the best vehicle for this level of detail. Other departmental documents, such as the 305(b) Report, TMDLs, and Watershed Management Plans are better suited for this purpose. The 303(d) List represents a snapshot of the water quality conditions within a watershed on a five-year cycle. Consequently, it is not intended to evaluate increments of progress but rather to present a determination of water quality attainment.

Comment B-2. *The department has proposed delisting several streams in the Nolichucky watershed. We do not consider it appropriate to use a biological survey to delist streams originally listed for siltation.*

Response: Most of these streams were originally listed on the basis of a biological/habitat survey, which we consider one of the best ways to document stream impacts due to siltation. If silt is a problem in a stream, the habitat survey will document it. We feel comfortable with our basis for removing these streams from the list.

Comment B-3. *The department disregards data submitted by citizens.*

Response: The division used all reliable data that were readily available for the assessment of Tennessee's waterways in the development of the draft 303(d) List. This included data from TDEC, other state and federal agencies, universities, citizens, and the private sector. In December 2006 and January 2008, the division issued a public notice requesting water quality data for use in the statewide water quality assessment.

All submitted data were considered in the assessment process. If data reliability could not be established, submitted data were used to screen waters for future studies. In situations where data from the division and another source did not agree, more weight was given to the division's data unless the other data were significantly more recent.

Comment B-4. *The continued listing of reservoir tailwaters is a source of concern. The department should explore development of site-specific clean water goals for tailwaters which recognize their altered condition.*

Response: This comment is about water quality standards and can be resubmitted during the triennial review.

C. GENERAL COMMENTS: Mercury

Comment C-1. *Mercury is found naturally in soil and rocks. These natural sources should be noted where mercury is listed as a pollutant of concern.*

Response: We believe that there are natural sources of almost all pollutants documented in our assessment process. Since these natural background levels are normally not enough to cause loss of use, we do not consider it necessary to make special note if it. Where there are known local sources of mercury, we have included them.

Comment C-2. *Atmospheric deposition is listed as a source at most mercury listings. There are other sources of mercury other than atmospheric deposition, including native soils.*

Response: EPA has said that the majority of mercury mobilized in the environment got there by way of atmospheric deposition from the burning of coal, so we are comfortable noting this as a likely source. Where there is another known source of mercury, we have noted that in the document. Beyond that, it

will be the task of the mercury TMDLs to quantify and suggest control strategies for the sources in each situation.

Comment C-3. *The public might get the impression that areas with mercury listings have problems because of higher magnitude local sources. Instead, it may be that the methylation process is more efficient in some areas than others.*

Response: We agree with this comment. Only a few of the mercury assessments cite a local source – the remainder do not.

D. GENERAL COMMENTS: Appendix A

Comment D-1. *The department has proposed delisting some streams previously assessed as impacted by habitat alteration on the basis of biological studies. If habitat evaluations were done in conjunction with these biological assessments, these results should be included with the rationale for delisting.*

Response: It is part of our standard procedure to perform habitat assessments along with biological surveys. We have added these data to Appendix A.

Comment D-2. *The department has proposed delisting Pickett Lake, which is identified as being in Standing Stone State Park. Isn't it in Pickett State Park instead?*

Response: The commenter is correct. We will make this change.

Comment D-3. *The department has proposed delisting Martins Creek near Erwin. This stream should continue to be listed and the source of impairment should be identified as industrial discharges.*

Response: We monitored Martins Creek in 2005 and it passed our biocriteria. The TMI score for the creek was 34 (a score of 32 is passing) and habitat scored very well (155). We are comfortable that Martins Creek is meeting water quality standards and know of no recent data to the contrary.

Comment D-4. *The department has proposed delisting Cove Creek near Erwin. There are livestock operations along the stream and it should be left on the 303(d) List.*

Response: TVA performed a biological assessment of Cove Creek in 2003 and the department did another survey at a different spot in 2005. Both surveys documented that the stream is meeting the fish and aquatic life use. We are comfortable with our basis for delisting.

Comment D-5. *The department has proposed delisting an unnamed trib to Woodcock Creek and said in the rationale that "pH levels were fine." This should be clarified.*

Response: The rationale will be changed to indicate that pH levels met our criterion.

Comment D-6. *The department has proposed delisting the following streams for dissolved oxygen and/or nutrients: Clear Creek (TN06010107029T_1150), Poplar Tree Lake (TN08010100POPLARTLK_1000), Clear Creek (TN08010203001_0900) and Beaver Creek (TN08010203010_2000). The rationales for these segments should indicate whether or not chemical data were considered in the original listings or the basis for delisting.*

Response: We will clarify these rationales as requested.

Comment D-7. *Please explain why the department has proposed delisting the Mississippi River for nutrients when a USGS report indicated that Tennessee is one of the top ten contributors of nitrogen to the Gulf of Mexico.*

Response: As the commenter notes, we have proposed delisting our portion of the Mississippi River for nutrients.

The existing listing of Tennessee's portion of the Mississippi River for nutrients pre-dates our development of specific procedures for nutrient listings. These procedures do not support the listings. (We share the river with Arkansas, Missouri, and Kentucky – none of them have it listed for nutrients.) The reason we are proposing to delist the Mississippi is that we had no basis under our regulatory authority for the original listing. No Tennessee water quality standard is being violated or is being threatened with being violated.

This proposed delisting must be reviewed by EPA and if they tell us that the waterbody should remain listed due to impacts to downstream waters, we will withdraw our proposal. However, in order for EPA to take that position, we would also think it necessary for other bordering states to be required to list the Mississippi River for nutrients, something EPA has not done in the past.

EPA Region 4 previously reviewed and approved the state of Mississippi's delisting of the Mississippi River for nutrients. The decision document for this action provides information that we will use to supplement our rationale for this delisting.

Comment D-8. *Please explain why the department states in Appendix A that the current listing of the Mississippi River for nutrients "will not contribute anything" to the process to reduce nitrogen to the Gulf of Mexico.*

Response: Tennessee was one of the first states in the country to develop and promulgate regionally-based numeric translators for nutrient criteria and to place numeric permit limits for nutrients in NPDES permits. We remain committed to the development of clean water goals for nutrients and the reduction of loadings to nutrient impaired waters. Where waters have been found by our monitoring program to be impacted by nutrient loadings, we have not hesitated to add them to the 303(d) List.

We fully support national efforts to address hypoxia in the Gulf. When a national plan has been developed to equitably reduce nutrient loadings, we will do our part to implement these goals.

However, the basis for this national effort should be the documented impacts to the Gulf rather than the isolated 303(d) listing of the river by Tennessee. Taking our logic a step further, the Mississippi River listing by Tennessee may even detract from the focus of the national effort.

Comment D-9. *The department has proposed delisting the Blue Basin of Reelfoot Lake for elevated pH. The rationale for this delisting should indicate that the lake will remain listed for nutrients.*

Response: We will clarify this rationale as requested.

E. GENERAL COMMENTS: Miscellaneous

Comment E-1. *The commenter believes that the department does not aggressively pursue enforcement cases.*

Response: The department's goal in implementing Tennessee's clean water laws is to insure compliance by whichever technique, or combination of techniques, works best. At times, education and technical assistance is needed. At other times, enforcement is necessary to remove the economic advantage that might be gained from noncompliance and also to compensate the citizens of Tennessee for the loss of a resource. We do not hesitate to employ enforcement when the situation calls for it.

Comment E-2. *The commenter believes that the Knoxville WPC office does not effectively utilize the division's expedited enforcement process. They only averaged one of these per month in 2007.*

Response: In 2007, the Knoxville office issued 63 expedited enforcement orders. This is more than five per month.

Comment E-3. *The commenter believes that the TMDL process is used by the department to study problems rather than fix them.*

Response: We agree with the commenter that if the fix for a water quality problem is obvious, there is no need to do a TMDL. In fact, we can assess streams as Category 4B (no TMDL needed) if a control strategy is already known and can be implemented in the short term. However, in many cases, there are multiple sources of the pollutant of concern and a TMDL is needed to accurately and comprehensively quantify sources and control strategies.

Comment E-4 *As TMDLs are developed, we believe it would be beneficial if TDEC required permits to allocate the available assimilative capacity of the waters for the pollutant of concern.*

Response: All calculations for permits consider the available assimilative capacity of the receiving water. Of course, impaired waters would not have any available assimilative capacity for a pollutant of concern.

Comment E-5 *The MS4 permit for Knoxville should include a requirement that the program assist in the implementation of TMDLs in order to address listed streams.*

Response: We agree that MS4 programs are important partners in the implementation of TMDLs. It is clearly in the city's interest that they participate in the development and implementation of control strategies.

Comment E-6. *The department would have more data upon which to base 303(d) decisions if permit holders with Storm water Pollution Prevention Plans (SWPPs) were required to do monitoring.*

Response: We do regulate the storm water discharges from a great number of industrial and commercial sites. But because in most cases it is very difficult to know what effect any particular storm water source has on water in the stream, we don't, as a regular practice, require them to monitor streams.

Many permittees with SWPPs are, however, required to monitor discharges from their sites. In fact, from 2003 through 2007, such permittees submitted over 26,000 effluent monitoring results to the division. We use these data in the assessment process, but because these samples were of storm water runoff rather than instream samples, the results were more helpful in source identification and permitting decisions than determining use support in streams.

F. SPECIFIC COMMENTS

Comment F-1. *Eroding haul roads are a source of silt to Clear Fork (TN05130101015_2000). The 303(d) should note this.*

Response: The department agrees and will make this addition.

Comment F-2. *In addition to Clear Fork (TN05130101015_2000), which is currently listed, recent data indicate that two tributaries, Straight Creek and Rock Creek, are also impacted. These tribs should be added to the 303(d) List.*

Response: The department agrees and will make these additions. Biological surveys in 2007 indicated that these streams were not meeting the fish and aquatic life use due to siltation.

Comment F-3. *The source of impacts to White Oak Creek (TN05130101016_0100) should be abandoned mining as almost all current discharges have been eliminated.*

Response: The department agrees and will make this change.

Comment F-4. *The sources of impacts to Bennetts Fork (TN05130101046_0200) should include abandoned mining and haul roads.*

Response: The department agrees and will make this change.

Comment F-5. *The source of impacts to Smoky Creek (TN05130104037_1700) should be abandoned mining as there are no active discharges in this area.*

Response: The department agrees and will make this change.

Comment F-6. *The National Park Service has data indicating that there may be issues with pH in the following streams within the Big South Fork National River and Recreation Area: Bandy Creek, Grassy Fork, and Bear Creek in Scott County; and Rock Creek in Pickett County (South Fork Cumberland 05130104).*

Response: Bear Creek has been listed for pH for a number of years. (See page 14 of the draft 303(d) List.) Additionally, EPA has approved a pH TMDL for this watershed, which includes Bear Creek in its coverage.

The department uses Rock Creek as a reference stream due to its exceptional biological quality. It is also identified as an Exceptional Tennessee Water. The commenter is correct that pH levels do occasionally dip below 6.0, however, in the absence of mining impacts, we consider this to be the natural condition within subecoregion 68a.

Regarding Grassy Fork and Bandy Creek: we were provided these data collected by the National Park Service. However, the data did not include the dates the samples were collected. Since we do not have independent confirmation of these data and are uncertain of the time period they were collected, we would prefer not to list at this time.

Comment F-7. *The source of impacts to Collins River (TN05130107016_2000) should be abandoned mining as there are no active discharges in this area.*

Response: The department agrees and will make this change.

Comment F-8. *Sulfates should be removed as a cause of impacts to Dry Creek (TN05130107023_0200).*

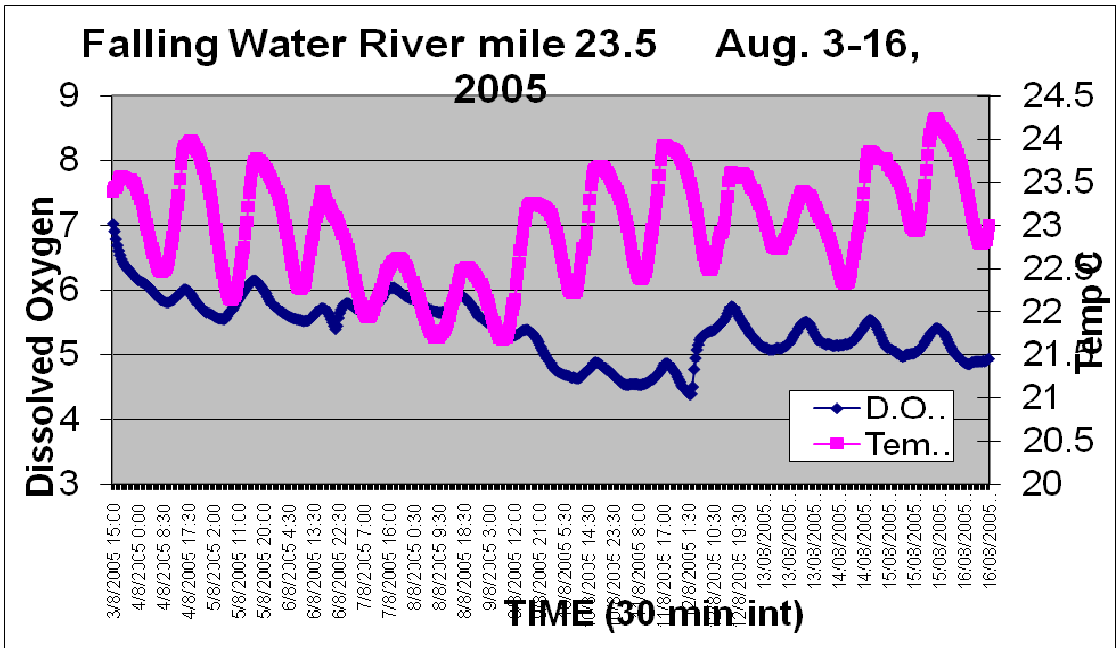
Response: The department agrees and will move this pollutant to Appendix A as a potential delisting. We will provide a rationale for the change. The stream will remain listed for the other pollutants impacting fish and aquatic life, including low pH.

Comment F-9. *Pigeon Roost Creek below Cookeville should not be assessed as impacted by nutrients.*

Response: In a previous cycle, the department assessed Pigeon Roost Creek as impacted by nutrients, a determination that was appealed to the Environmental Protection Agency. EPA reviewed the basis for this assessment and upheld the listing. We are currently monitoring this watershed and will reassess it during the next cycle. If data document that the water quality standards are being met, we will propose delisting the waterbody.

Comment F-10. *Falling Water River should not be assessed as impacted by nutrients or low dissolved oxygen. The department's own data indicates that the dissolved oxygen criterion is being met.*

Response: The commenter is referring to a 2004 report written by the division which states that the dissolved oxygen criteria was being met in the Falling Water River and suggested delisting. However, in 2005, we deployed diurnal monitors at mile 23.5 (d/s mouth of Pigeon Roost Creek). These data indicated continuous violations of the DO criterion for two and a half days (see following figure).



Due to the 2005 data, we cannot propose delisting this cycle. As a Group 2 watershed, this stream will be reassessed in the next cycle and this decision can be revisited at this time.

Regarding nutrients: we note in passing that a cause assessment utilizing EPA's CADDIS approach was recently performed by Tennessee Tech University specific to Falling Water River. As presented at the 2008 AWRA conference, this assessment supported the existing listing of nutrients. The nutrient listing can be revisited in the next cycle.

Comment F-11. *EPA asks if the elevated oxygen saturation and pH levels in Cordell Hull Reservoir documented by the Corps of Engineers justify the listing of the lake as impaired by nutrients?*

Response: In order to respond to this comment, we reviewed the Corps profile data for both 2006 and 2007 from Cordell Hull. These two drought years probably reflect critical conditions. In both years, there were some levels of pH over 9.0 at certain stations, which are water quality standards violations. (We consider a level of 9.0 to meet our present criterion.) Oxygen saturation levels were occasionally over 120%.

While we acknowledge that these might be indicators that biomass levels are excessively high, we do not have direct evidence that uses are impaired. We would prefer to not list the lake at this time, but will continue to review the data collected by the Corps.

Comment F-12. *EPA asks if the elevated zinc levels in Cordell Hull Reservoir documented by the Corps of Engineers justify the listing of the lake as impaired.*

Response: In order to respond to this comment, we reviewed the Corps chemical data for Dale Hollow. In 2006, the Corps did not detect zinc at any station. (All samples reported as <10.)

EPA provided the older data used to arrive at this comment. We asked the Corps about these results and they think the newer data should be used to assess the lake due to questions about the reliability of the older data. We do not believe there is a zinc problem in Cordell Hull Reservoir.

Comment F-13. *EPA asks if the elevated oxygen saturation and pH levels in Old Hickory Reservoir documented by the Corps of Engineers justify concerns about the lake.*

Response: We reviewed the Corps profile data for both 2006 and 2007 from Old Hickory. These two drought years probably reflect critical conditions.

We did not notice any obvious issues in 2006. In July 2007, there was an area of low dissolved oxygen downstream of the Gallatin Steam Plant. Additionally, at the dam forebay, both pH and dissolved oxygen saturation levels were elevated. However, when the Corps monitored the lake again in August, dissolved oxygen and pH levels met criteria. We do not believe that these issues rise to the level of listing, but agree with EPA that there is reason to continue to monitor Old Hickory.

Comment F-14. *The collection system overflow point on Pages Branch in Davidson County has been eliminated. This source can be removed from the assessment of this segment.*

Response: We agree with this comment and will make this revision. This is not a delisting, but is simply a change in sources for the existing impairment. We will also merge Segment 1000 with 2000 since these are small waterbodies.

Comment F-15. *The pathogen data collected by TDEC on Little Creek indicated lower concentrations in 2005-06. Metro Nashville also collected data. This stream can be delisted for pathogens.*

Response: We agree with this comment and will propose this revision, subject to approval by EPA. The stream will need to remain listed for the pollutants impacting fish and aquatic life.

Comment F-16. *Metro Nashville recently collected data at multiple listed streams: Vaughns Gap, Jocelyn Hollow, Murphy Branch, Manskers, Brown, Sims, and Sevenmile creeks. Can these data be used to delist these streams?*

Response: The department also collected data at these sites and feels that either the water quality standard is still not being fully met, or that we cannot yet meet the burden of proof needed to delist. Like the commenter, we are encouraged by the appearance of improvement in these urban streams.

Comment F-17. *The Harpeth River Watershed Association assisted with the collection of E. coli samples at several streams near Eagleville in February, March, and April of 2007. These data should be used to update the 303(d) List.*

Response: Data from Kelly Creek, Cheatham Branch, the Harpeth River, and two springs were provided. At some sites, only one *E. coli* sample was collected.

At two sites - Cheatham and Kelly creeks - three samples were collected. We note that Kelly Creek is already listed for *E. coli*.

Harpeth River is a Group 1 watershed and we are currently collecting additional data. We will add these data to ours and use them to assess these streams during the next cycle.

Comment F-18. *Do the acetone and toluene levels in Liberty Creek near Franklin impact the entire stream? Which uses are impacted?*

Response: Liberty Creek is less than two miles in its entirety, so in the draft assessment, we indicated that the entire stream length was impacted by the releases of acetone and toluene. In the new version of the list, we have split segment TN05130204016_0300 into two segments (0300 & 0350) to clarify that the releases only impact the lower portion of the stream. (Both the lower and upper segments are impacted by habitat loss and silt.)

The department considers the releases of acetone and toluene to impact fish and aquatic life, plus the recreational use of the stream. The impacts to fish and aquatic life are considered indirect (non-toxic) and are thought to be a result of biochemical oxygen demand and the promotion of bacteria growth (habitat effect). The impacts to recreational uses of the stream are a direct aesthetic effect in that strong odors would limit the public's use of the waters. Both of these conditions are violations of Tennessee's narrative water quality standards.

In addition to the changes in segment size, we have also added low dissolved oxygen as a pollutant impacting segment 0300.

Comment F-19. *McCrory Creek near College Grove in the Harpeth River watershed appears to be impaired by silt. It should be added to the 303(d) List.*

Response: In 2007, the division performed an antidegradation evaluation on McCrory Creek in the area of concern. Included in the evaluation was a SQSH biological survey, which scored 36. (Passing score is 32 in this subecoregion.) We believe that the stream is fully supporting its fish and aquatic life use at this time.

Comment F-20. *Lower Barkley Reservoir is listed as impaired due to temperature and low dissolved oxygen, with the thermal discharge of the Cumberland Steam Plant cited as source. However, the 316(a) thermal discharge permit establishes Balanced and Indigenous Population (BIP) as the appropriate water quality criterion rather than the state's numeric criteria.*

Response: We agree with the commenter that BIP is the federally-promulgated water quality standard for heat in the Tennessee portion of Barkley Reservoir. However, we consider the state's numeric water quality criterion for dissolved oxygen to apply.

Comment F-21. *Biological studies of Barkley fish populations undertaken in 2007 were inconclusive as to whether or not a Balanced and Indigenous Population (BIP) of fish was being maintained.*

Response: The Tennessee Valley Authority performed fish population surveys in both August and October of 2007. We do not agree that the results are inconclusive.

Fish populations - both in numbers and structure - showed stress downstream of the thermal discharge. The downstream populations were dominated by species tolerant to adverse water quality conditions. The lack of downstream species that eat benthic invertebrates is evidence that benthic communities were also impacted. EPA's Gold Book states that a temperature of 89.6°F is the "upper tolerance limit for a balanced benthic population."

Following are additional observations made by Division biological staff based on their review of the 2007 TVA fish population data:

- Overall RFAI (Reservoir Fish Assemblage Index) score dropped 6 points from 2005 at the downstream site while the upstream site remained the same as 2005, despite the drought conditions.

- The metrics contributing the most to the difference in RFAI scores were benthic invertivores, number of intolerant species, and percent tolerant individuals. No smallmouth bass or any species of redhorse were documented at the downstream site, nor any white bass. Percent of the sample made up of fish tolerant to pollution/stress more than doubled (to almost 50% of the sample) at the downstream site since 2005, but stayed about the same as 2005 at the upstream control.

- The downstream site in 2007, when compared to the same site in 2005, exhibited 9 fewer species, 3 fewer benthic specialists, 2 fewer intolerant taxa, and a much higher percent of tolerants and omnivores. This all represents a shift in the fish community to a less stable, less diverse, more tolerant fish community. At the same time, the upstream control site shows only modest increases in the percent tolerants and omnivores due to drought-related stresses, not enough to affect the metric scores.

-One quarter fewer species were collected downstream (18) than upstream (24) in August. Missing species included 1 intolerant and 1 benthic invertivore.

- Nine species collected in October were not present in August at the downstream site. One of the missing species downstream of the steam plant was the intolerant benthic invertivore, the spotted sucker. This species was found at the upstream site in both August and October. Only 1 benthic invertivore was present in the downstream August sample, the freshwater drum. Although considered a benthic invertivore in the TVA index, adult drum also consume fish as a principle component of their diet, so may not be as dependent on the macroinvertebrate community.

- Three species were found in August, but not in October, downstream of the plant: white bass, paddlefish and warmouth. None of these are intolerant or benthic invertivores.

- The abundance information shows that 68% fewer fish were collected downstream of the plant than upstream in August. Ninety-two percent fewer fish were collected in the summer than in the fall at the downstream site. There was only a 19% difference in abundance between the two seasons upstream of the plant.

Additionally, there was a reported fish kill of striped bass in the Kentucky portion of the reservoir (RM 49) the same week in August that Corps monitoring indicated that elevated temperatures and low dissolved oxygen conditions extended from Cumberland Steam Plant almost to Barkley dam. (Source of fish kill information: Kentucky Department of Fish and Wildlife Resources.)

Due to TVA's documentation of the substantial shift in the balance of the indigenous fish population during the summer of 2007 while the temperature of Barkley was elevated by the discharge of the Cumberland Steam Plant, it is the conclusion of the department that BIP was not being maintained in Barkley Reservoir and 303(d) listing is appropriate.

Comment F-22. *The state should defer action or assess Barkley as Category 3 (Insufficient Data) until additional studies can be performed in 2008.*

Response: Category 3 is for waterbodies where we lack sufficient data to assess any use. We have a considerable amount of physical data from Barkley Reservoir during the summer of 2007, collected by both the Corps of Engineers and the Tennessee Valley Authority. We do not believe that our statutory responsibility to assess waters with readily available information allows us to consider deferring this action or assessing the lake as Category 3.

Comment F-23. *Any detected impact to BIP in Barkley Reservoir may be temporary, another reason to defer action.*

Response: Like the commenter, we are hopeful that the situation in Barkley will improve and believe that TVA will take positive steps to prevent a recurrence. We acknowledge that reduced flows due to repairs to Wolf Creek dam added to the magnitude of the water quality issues in Barkley during 2007.

In CWA Section 303(d)(1)(B), Congress requires states to identify areas where thermal discharges cause waters to fail to meet BIP.

> *(B) Each state shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under section 1311 of this title are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.*

Based on the plain meaning of this section, the fact that thermal controls did not maintain BIP during 2007 requires that Barkley be listed.

Comment F-24. *If Barkley Reservoir is to be assessed as impacted, the waterbody should be placed in Category 4C. If it weren't for the low flow levels in the Cumberland River due to the drought and the repairs to Wolf Creek dam, the conditions in 2007 would not have occurred.*

Response: Category 4C is for violations of water quality standards that are not caused by a pollutant. In 4C waters, a TMDL is not required.

Clean Water Act Section 303(d)(1)(D) speaks to this:

> *(D) Each State shall estimate for the waters identified in paragraph (1)(B) of this subsection the total maximum daily thermal load required to assure protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife. Such estimates shall take into account the normal water temperatures, flow rates, seasonal variations, existing sources of heat input, and the dissipative capacity of the identified waters or parts thereof. Such estimates shall include a calculation of the maximum heat input that can be made into each such part and shall include a margin of safety which takes into account any lack of knowledge concerning the development of thermal water quality criteria for such protection and propagation in the identified waters or parts thereof.*

Our understanding of the above passage is that it does not give us the flexibility to place Barkley Reservoir in Category 4C, since a Total Maximum Daily Thermal Load study is required.

Comment F-25. *When the Department issued mercury advisories at multiple locations in 2007, several other streams were identified as being areas of concern where additional data were needed to determine whether or not the fish posed a direct human health threat. What is the status of the South Fork Holston near Kingsport?*

Response: In 2006, two largemouth bass composite samples were collected at the Ridgefield Bridge (mile 1.1), just downstream of Kingsport. The samples measured 0.41 ppm and 0.44 ppm for mercury, leading to concerns about potential health effects to fishermen eating largemouth bass.

In the fall of 2007, fish were collected for analysis for mercury, PCBs, and dioxin at the same location. At the time of this document, we do not have the results for the organic contaminants. However, the composite sample of largemouth bass measured 0.14 ppm for mercury – much lower than the previous results. While we do not believe that an advisory would be justified at this time, we will continue to monitor this site.

Comment F-26. *The comment field for the South Fork Holston River (TN06010102014_1000) should be revised to note that TVA has attempted to improve dissolved oxygen and flows in the tailwaters.*

Response: We will make this addition, but note that this waterbody is not considered impacted due to low DO.

Comment F-27. *The South Fork Holston River near Kingsport should be listed due to discharges from the municipal discharge.*

Response: The department has monitored the river in the vicinity of the municipal discharge and considers the waterbody to meet classified uses. (The more upstream section of the river is considered impacted by poor quality discharges from Fort Patrick Henry Reservoir.) There is no need to assign sources to unimpaired waters.

Comment F-28. *A portion of the upper Cherokee Reservoir has been assessed as impacted by mercury with atmospheric deposition identified as source. Since it is likely that some mercury originating in the North Fork Holston passed*

through John Sevier Detention Reservoir into Cherokee, "Source in Other State" should be added to this listing.

Response: We will make this revision.

Comment F-29. *The comment field for the Holston River (TN06010104001_2000) should be revised to note that TVA has attempted to improve dissolved oxygen and flows in the tailwaters.*

Response: We will make this addition.

Comment F-30. *The department should review TVA's 2007 biological data collected downstream of Cherokee dam and use the comment field to note the improvement in biological populations.*

Response: TVA collected samples (fish IBI and benthic macroinvertebrates) at mile 25.0 (McKinney Island), mile 33.3 (Nance Ferry), and mile 51.1 (below the dam). The fish IBIs scored poorly close to the dam, but better further downstream. Macroinvertebrates scored poorly at every station.

Comment F-31. *The Upper Nolichucky Watershed Alliance has submitted chemical and biological data collected by volunteers in area streams.*

Response: Thank you for this submittal of data. These data supplemented sampling performed by the department.

Comment F-32. *The department is not adequately monitoring the Nolichucky River and local drinking water for radioactivity in the vicinity of Nuclear Fuel Services(NFS) in Erwin.*

Response: Since 1984, the TDEC's Division of Radiological Health (DRH) has collected water samples on a monthly basis from the Nolichucky River upstream and downstream relative to the NFS site. Since 1992, DRH has collected a finished water sample from the Jonesborough Water Plant and a raw water sample from the Greeneville Water Plant. These samples are analyzed for gross alpha and gross beta activity.

Comment F-33. *The draft 2008 303(d) List does not identify any impacts to the Nolichucky River or any of the smaller streams in the vicinity of Erwin due to the discharges from Nuclear Fuel Services. Why not?*

Response: Nuclear Fuel Services (NFS) is a fuel cycle facility licensed by the Nuclear Regulatory Commission (NRC). Radioactive material concentrations in NFS effluents are subject to NRC regulations and/or license conditions.

NFS periodically releases liquid effluent from their onsite Waste Water Treatment Facility (WWTF) to the Nolichucky River under strict guidelines based on annual dose limits to the public. No liquid effluent is discharged to any of the springs or creeks on or near the NFS site, though Martin Creek could receive stormwater runoff from the NFS site. Banner Spring has been physically isolated from storm water runoff through the use of engineered controls, except at the point where it empties into Martin Creek.

While some elevated radioactive material concentrations in the NFS WWTF outfall have been documented in the past, water samples collected from the Nolichucky River, the Greeneville Water Plant, and the Jonesborough Water Plant indicated no impacts to the public water supply. The occurrence of elevated radionuclide concentrations has been addressed and, to ensure that annual dose limits to the public are met, NFS is required to operate according to established action levels in regard to radionuclide concentrations in effluent releases.

Comment F-34. *The draft 2008 303(d) List does not identify any impacts to North Indian Creek due to the discharges from Nuclear Fuel Services. Why not?*

Response: North Indian Creek is some distance from the site. We do not believe that the facility discharges in any form to this stream.

Comment F-35. *Some of the NFS discharge goes to the Erwin POTW. Is this discharge impacting the Nolichucky River?*

Response: As stated previously, the department is monitoring the Nolichucky upstream and downstream of Erwin and there is no evidence of a current violation of water quality standards.

Comment F-36. *Why are NFS's discharge reports to the Nuclear Regulatory Commission not public information? Perhaps they don't exist.*

Response: This question should be directed to the Nuclear Regulatory Commission.

Comment F-37. *How would the department know if a spill had occurred at NFS?*

Response: Overflows and spills to surface waters are prohibited and must be reported to the department. To do otherwise would be in violation of the statute. The department's monitoring efforts would document impacts to area streams if unreported spills occurred.

Comment F-38. *How do we know that public drinking water supplies are not contaminated by discharges from NFS?*

Response: Public water suppliers must meet very stringent limits, called MCLs. As stated previously, TDEC monitors the finished water at Jonesborough and raw water at Greeneville to test for radionuclides.

Comment F-39. *During the '90s, violations of water quality criteria were noted in the vicinity of NFS. Additionally, NFS violated its NPDES limits from 1990 to 1995. These violations are documented in the 1999 NRC Environmental Assessment.*

Response: Based on the information we have today, water quality standards are being maintained in these streams, except as noted in the 303(d). NFS is in compliance with its NPDES permit.

Comment F-40. *The draft 303(d) List has not identified any ground waters as impacted by NFS. According to a 2007 Agency for Toxic Substances and Disease Registry (ATSDR) report, there may have been ground water contamination at this site.*

Response: The 303(d) List is a compilation of surface waters that violate water quality standards. However, there have been some on-site impacts to ground water. For more information about this issue, contact the Nuclear Regulatory Commission.

Comment F-41. *Facilities such as NFS should not be allowed to self-monitor and report results to TDEC.*

Response: As stated previously, TDEC monitors water quality in the vicinity of NFS. As a practical matter, it would be impossible for TDEC staff to do all compliance monitoring at all individual facilities across the state. However, we perform inspections and compliance assurance activities. Facility operators who falsify data are subject to criminal prosecution.

Comment F-42. *Banner Spring Branch is not listed as impaired in the vicinity of NFS, yet it was relocated and placed in a culvert. How can it be meeting uses?*

Response: The commenter is correct in that about ten years ago NFS was authorized to relocate and culvert a section of Banner Spring Branch. Part of the basis for this project was to prevent contact of the water with contaminated soils on-site. The impact to the section of Banner Spring Branch was mitigated by improvements to Tate Springs, an impacted tributary to North Indian Creek. It should be noted that the section of Banner Spring that was encapsulated is on NFS property, a high security facility where public access is not possible.

Comment F-43. *If TDEC does additional sampling or reports about streams in the vicinity of NFS in the future, please forward these data/documents to the Erwin Citizens Awareness Network.*

Response: The Division of Water Pollution Control places water quality data in the STORET national database managed by EPA. Written water quality reports are posted on our webpage. Both are accessible by the public. Requests for radionuclide results from the Nolichucky sampling should be directed to the Division of Radiological Health.

Comment F-44. *The department has identified Little Limestone Creek as violating water quality standards due to pollutants from the Jonesborough sewage treatment plant. In spite of the poor level of treatment at the Jonesborough STP and overflows in the collection system, the city continues to add connections to an obviously overloaded facility. Why hasn't the Division taken enforcement action against this facility?*

Response: Certainly, the city needs to address its wastewater problems and the resulting impacts to Little Limestone Creek. At the time of this writing, we are considering what response by this agency will be appropriate.

Comment F-45. *Little Limestone Creek has an obvious ammonia problem downstream of the Jonesborough STP, but is not listed for that on the 303(d).*

Response: The department has chemical monitoring stations at mile 7.0 (near Teleford) and at mile 7.7 (d/s Hwy 353). At these sites, ammonia levels are above what we would consider background, but are not at toxic levels. However, we acknowledge that our stations are a mile or two downstream of the sewage treatment plant.

We checked the plant's compliance history and noted regular violations of its ammonia limit. Due to the small size of Little Limestone Creek at this point and

the permit violations, we agree with the commenter that ammonia should be added to the listing of Segment TN06010108510_2000.

Comment F-46. *Little Limestone Creek is a funny color and smells bad downstream of the Jonesborough STP.*

Response: Staff have looked at this stream on numerous occasions and believe that the color is due to algae, rather than something being discharged by the facility. The excessive algae is being caused by the discharge of nutrients, a condition already documented on the 303(d) List. It may be that some of the bad smells in the immediate area are coming from the facility rather than from Little Limestone Creek.

Comment F-47. *Cove Creek in Greene County should not be delisted.*

Response: The stream was originally listed due to the appearance of biological impacts to the stream. More recent surveys scored better than the state's biocriteria for the area. We are comfortable with our basis for delisting.

It may be that the commenter is concerned about pathogen levels. However, we do not currently have pathogen data in the stream. We will try to look at that in the next monitoring cycle.

Comment F-48. *The commenter agrees with the department that Carson Creek in Greene County is impacted and is concerned about the pollutant sources in the watershed.*

Response: We share your concern about water quality in this watershed.

Comment F-49. *Should Horse Creek (TN06010108088_1000) in Greene County be added to the 303(d) List?*

Response: The department has done biological surveys at two points in Horse Creek: mile 0.7 and at mile 7.0. (We don't have the full results back from our station at mile 7.0.) Additionally, we've had a chemical/pathogen monitoring station at mile 7.0 and at mile 0.5. TVA has a biological monitoring station at mile 2.2.

The biology of the stream looks good. Pathogen levels at our upper station (mile 7.0) are very low, which is to be expected in a stream that comes right out of the National Forest. However we are concerned about the pathogen levels at our station closer to the mouth of the stream. We will place the lower portion of the

creek on the 303(d) List as impacted by pathogens with pasture grazing as a likely source.

Comment F-50. *The town of Baileyton gets its water from Lick Creek and has had trouble with disinfection byproducts. The commenter is concerned about this.*

Response: Lick Creek is identified on the 303(d) List as being impacted. Ultimately, public water suppliers have the responsibility to supply water to the public that meets drinking water criteria (MCLs).

Comment F-51. *Is the mercury problem in the Watauga River Watershed restricted to Watauga Lake?*

Response: Mercury levels in fish have been tested in the other sections of the Watauga at various times in the past and are below current concern levels.

Comment F-52. *What is the regulatory status of the "Mill Race" in Elizabethton? It appears to the commenter that this watercourse has been impacted. The city has placed rock gabions along the bank.*

Response: The Mill Race is a man-made conveyance used to carry water from the Doe River to the historical mill. Thus, it is considered a wet weather conveyance rather than a stream and the fish and aquatic criteria would not apply to it.

Comment F-53. *Has the Doe River been sampled near Elizabethton? The commenter has seen discolored water discharged from storm drains.*

Response: The division has a monitoring station at mile 1.1 (Civitan Park). Additionally, TVA samples near Elizabethton. Stormwater discharges that appear to contain pollutants should be reported to the Johnson City Field Office at (423) 854-5400.

Comment F-54. *When the Department issued mercury advisories at multiple locations in 2007, several other streams were identified as being areas of concern where additional data were needed to determine whether or not the fish posed a direct human health threat. What is the status of the French Broad River upstream of Douglas Reservoir?*

Response: TVA and TDEC have sampled fish at either the Rankin Bridge and/or at Highway 321 near Newport for numerous years. Traditionally, the most prevalent bass species – largemouth bass at the Rankin Bridge and smallmouth bass at Highway 321 – have tended to have elevated mercury levels.

In the fall of 2007, bass composite samples collected by TWRA and analyzed by TDEC measured 0.29 ppm and 0.15 ppm, respectively, for mercury at the Rankin Bridge and Highway 321. Because the average level of mercury in largemouth bass continues to be above 0.3 ppm, we will add this section of the French Broad River to the 303(d) List as violating the mercury criterion. Atmospheric deposition will be identified as a source. We will continue to track mercury levels in smallmouth bass at Highway 321.

Comment F-55. *The Pigeon River should be listed as impacted by industrial pollution.*

Response: It is. Pigeon River Segment TN06010106001 – 4000 is on the list and the source of the pollutant "color" is Major Industrial Point Source.

Comment F-56. *The pathogens in Long Creek in Cocke County have an "Undetermined" source. Pasture grazing of livestock is the likely source.*

Response: We visited this stream and agree with this comment. We will revise the assessment of this segment.

Comment F-57. *Multiple high elevation streams within the Great Smoky Mountain National Park violate Tennessee's water quality standard for pH and are listed. Some of these streams have documented loss of native trout populations. Due to the importance of the park, shouldn't the TMDLs for these streams be identified as high priority?*

Response: We originally identified these streams as a lower priority because we felt that EPA should take the lead on these studies. However, we agree that these TMDLs are high priority and will change the 303(d) List to reflect this. Additionally, we have been in discussions with EPA and the National Park Service about proceeding with these studies in an expedited manner.

Comment F-58. *The department should review TVA's biological data collected downstream of Douglas dam and determine whether the section can be delisted for flow and temperature alteration.*

Response: TVA collected samples (fish IBI and benthic macroinvertebrates) at mile 8.2 (Campbell Island), mile 15.1 (Seven Island), and mile 29.6 (Saffel Island). The fish IBIs scored either fair-good or good. However, macroinvertebrates scored poorly, with the station closest to the dam scoring the worst. Since the state's biological integrity criterion is not being met, the section should remain listed.

Comment F-59. *The commenter requests that a small "blue-line" stream in the vicinity of Westland Drive in West Knoxville be added to the 303(d) List due to sediment from a construction site.*

Response: We believe that while there may have been some sediment movement in this small stream in the past, the subdivision in question has been largely stabilized.

Comment F-60. *When the Department issued mercury advisories at several locations in 2007, other streams were identified as being areas of concern where additional data were needed to determine whether or not the fish posed a direct human health threat. What is the status of the Fort Loudoun Reservoir near Knoxville?*

Response: Fort Loudoun has a long-standing fishing advisory due to PCBs, but not for mercury. TVA has several fish sampling stations within Fort Loudoun Reservoir. At the station at mile 652 (downstream of the confluence of the Holston and French Broad rivers), largemouth bass composite samples have regularly been over the new trigger of 0.3 ppm. The 2006 largemouth bass composite sample measured 0.41 ppm mercury. (We did not have these results when the new 2007 fishing advisories were issued.)

At TVA's other stations within the lake, mercury levels in individual samples occasionally exceed 0.3 ppm, but on average, mercury levels are lower.

Because the average level of mercury in largemouth bass in upper Fort Loudoun Reservoir continues to be above 0.3 ppm, we will add this section of the lake to the 303(d) List as violating the mercury criterion. Atmospheric deposition will be identified as a source.

Comment F-61. *In listing the Clinch and Powell rivers near the Virginia stateline on the draft 303(d) List, Tennessee has not identified a true water quality standard violation as required by Section 303(d).*

Response: The basis for 303(d) listing a segment is violation of a Tennessee water quality standard. In both the Clinch and Powell, the cause is given as

"Loss of Native Mussel Species." The coinciding water quality standard for this is found in Chapter 4-4-3-.03(m) which states:

> *The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or adversely affected…*

Additionally, Chapter 4-4-3-.03(g) prohibits:

> *"substances or a combination of substances including disease - causing agents which, by way of either direct exposure or indirect exposure through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), physical deformations, or restrict or impair growth in fish or aquatic life or their offspring."*

We have freely acknowledged some uncertainty about the specific chemical or physical mechanism in which the toxic or other effect is imparted on the mussel fauna of the Clinch and Powell. We will continue to advocate additional research to isolate specific pollutants. However, since specific violations of Tennessee standards are identified, the listing is clearly appropriate.

Comment F-62. *In listing the Clinch and Powell rivers near the Virginia stateline on the draft 303(d) List, Tennessee has not identified an actual pollutant as required by Section 303(d).*

Response: We do not agree with the commenter that federal rules or guidance requires the identification of a specific pollutant. According to EPA's Integrated Report Guidance:

> "States should include impaired and threatened waters in Category 5 when a water is shown to be impaired or threatened in relation to biological assessments used to evaluate aquatic life uses or narrative or numeric criteria adopted to protect those uses even if the specific pollutant is not known."

In their letter to Water Pollution Control Director Paul Davis on May 24, 2007, EPA confirmed this position.

> "We understand that TDEC has determined that the Clinch River is threatened and the Powell River is impaired with respect to their designated uses, and the State accordingly intends to identify these waters on its 2008 Clean Water Act 303(d) list. Although we recognize

that TDEC has not determined the specific pollutant(s) impacting these waters, the State is correct in its understanding that waters impaired or threatened by an unknown pollutant should be included on the 303(d) list."

We are comfortable with the basis for this listing.

Comment F-63. *The department has an obligation to allow the public to review the basis for, and data used in, the proposed listing of the Clinch and Powell rivers. Tennessee has not done this.*

Response: We agree that the list is subject to public review and have provided two months since the draft was posted on our web site for that purpose. Additionally, Tennessee notified EPA and Virginia almost a year ago that we intended to list the Clinch and the Powell. We gave our basis for listing in the draft (loss of native mussel species) and all our data are either on file or in national water quality databases. As stated in the previous response, we are not required to specify a pollutant if it is undetermined.

Comment F-64. *As an alternative to listing the Clinch and Powell rivers, the department should consider using either Category 3, 4B, or 4C instead.*

Response: Category 3 is for waters where the state does not have enough data to make an assessment call. As stated in previous responses, Tennessee considers the available biological data sufficient.

Category 4B and 4C are for impaired waters subject to listing. As the mechanism of the toxic effect to native mussel fauna has not been identified and may be a pollutant, 4C would be inappropriate. Since there is no agreed upon control strategy for the sources of toxics, Category 4B would be inappropriate.

Comment F-65. *The listing of the Clinch and Powell undermines the Memorandum of Understanding between EPA Region 4 and 5, plus the states of Virginia and Tennessee. The listings are a departure from the terms of this agreement.*

Response: The paragraph cited by the commenter in support of their position states that the participants in the MOA understand the need for additional data to support regulatory decisions. Section 303(d) is one of the activities identified. However, like Virginia, our recognition of the need for additional research in the Clinch and Powell watersheds does not postpone our statutory duty under Section 303(d) to use readily available data to assess waterbodies within our boundaries.

Comment F-66. *EPA notes that Tennessee has listed Gap Creek as impacted by E. coli and "Undetermined Toxicity." They ask if data collected by the National Park Service could be used to specify a toxic pollutant. Levels of cadmium, iron, copper, lead, zinc, nutrients and low pH appear to be at issue.*

Response: We reviewed the National Parks Service data mentioned by EPA. It is our recollection that the bulk of these data (some in Kentucky) were collected during the construction of the U.S. Hwy 25E tunnel through the Cumberland Mountains, an event that caused some significant localized pollution issues.

Additionally, we noted that the metals data reported by the Park Service never identified a value below detection level. We would be concerned that this might indicate that some of these values were simply added at the detection levels of the day, which tended to fluctuate from lab to lab during this era.

Because these data are over 15 years old (1990-1992) and may reflect tunnel construction conditions, we would prefer to leave this cause as "Undetermined" and perform additional monitoring to specify a pollutant.

Comment F-67. *The draft identifies two segments of Russell Creek in the Powell River watershed as having the pollutant source "discharges from MS4 area." E. coli levels are elevated, but to my knowledge, there are no MS4 programs in this watershed.*

Response: The commenter is correct. We will change the source to "failing collection system" or "pasture grazing."

Comment F-68. *The draft identifies both Whiteoak Creek and Melton Branch as being impacted by strontium. Additionally, Whiteoak Creek is listed for cesium. These streams should be delisted, as levels of these pollutants are now protective of aquatic biota.*

Response: These streams are listed as impacting the recreational use. They would have to meet these criteria in order to be removed from the list.

Comment F-69. *A Record of Decision (ROD) in the CERCLA program is in place for both Whiteoak Creek and Melton Branch. This adds to the rationale for delisting.*

Response: The ROD potentially provides a rationale for placing the stream in category 4B (impaired, but with control strategy in place), but does not provide a basis for delisting that EPA would approve.

Comment F-70. *The Record of Decision (ROD) for both Whiteoak Creek and Melton Branch contains provisions for the exclusion of people from the area. This adds to the rationale for delisting.*

Response: The basis for listing any stream is where the state's clean water goals are not being met. This is certainly the case in these two streams. The fact that people must be restricted from these areas is direct evidence that goals are not being met.

Comment F-71. *Whiteoak Creek is assessed as impacted due to "Loss of Biological Integrity Due to Undetermined Cause." A Record of Decision (ROD) in the CERCLA program is in place for the creek. Additionally, the Oak Ridge National Lab has an NPDES permit which could be revised to correct this identified problem. For these reasons, the stream could be called Category 4B instead of Category 5 for this cause.*

Response: Category 4B is for sites where an agreed-upon control strategy will cause the water quality standard to be met in a reasonable time frame. Since the substance causing the toxic effect on Whiteoak Creek is undetermined at this time, we would be reluctant to suggest that the existing ROD or revisions to NPDES permits will address it in a reasonable time frame. We consider Category 5 to be appropriate.

Comment F-72. *If a cause of impairment for Whiteoak Creek is assessed as "Undetermined," it is premature to call it Category 5. Once the pollutant is indentified, it might properly belong in a different category.*

Response: In a previous comment concerning the Clinch and Powell rivers, we cited EPA's listing guidance which makes it clear that Category 5 is proper for impaired streams where the specific pollutant is undetermined.

The 303(d) List is updated every two years. If future information indicates that a different category is more appropriate for Whiteoak Creek, the list can be revised.

Comment F-73. *The draft identifies Bivens Branch in McMinn County as having a CAFO as a source of pollutants. The CAFO in question has improved its operation and is now in compliance.*

Response: The Division is currently monitoring Bivens Branch and will reassess the water quality during the next cycle. Improvement in the operation of

a CAFO in this watershed is welcome and should be verified via the current monitoring.

Comment F-74. *The comment field for the Hiwassee River below Appalachia Dam (TN06020002018_3000 & 4000) should be revised to note that TVA has attempted to improve flows in the tailwaters but must balance competing water uses. Additionally, the comment field should note that downstream of the bypass section, all uses are being maintained and that stretch is a valued trout fishery.*

Response: TVA provided water quality assessment data for three locations downstream from the Appalachia Power House (HRM 42.4 – Hwy 411; HRM 48.0 – Reliance; and HRM 51.2 – Cane Island). Evaluation of these benthic macroinvertebrate data suggest that only the community at HRM 42.4 passed the state's biological integrity criteria. The Division is currently monitoring the Hiwassee River and will reassess its status during the next cycle.

Comment F-75. *The group Oceana commissioned a study of mercury levels in the Hiwassee River. These data support the department's listing of the river as impacted by this pollutant.*

Response: No response necessary.

Comment F-76. *The Oceana study of the Hiwassee confirms that the source of mercury in the Hiwassee River is more likely the Olin facility than atmospheric deposition. The chlor-alkali process used by the Olin facility on the Hiwassee River is a significant source of mercury and a change in industrial process will be needed to improve conditions.*

Response: The department agrees that the Olin facility is a known mercury source. The Hiwassee River has a large watershed in three different states and there are likely other mercury sources, including atmospheric deposition. We have requested EPA's assistance on the development of a mercury TMDL for the river and will implement the control strategy it recommends. However, even before the TMDL is completed, the department will review the permits of dischargers in the Tennessee portion of the Hiwassee to determine if more stringent controls or process changes are required.

Comment F-77. *The department should not wait on EPA to perform a TMDL for the Hiwassee River.*

Response: We have said that we will not wait on a TMDL before reviewing how we have used our regulatory program to authorize mercury discharges and

emissions. However, in a watershed this large, it is imperative that we have a comprehensive approach to mercury sources. It is our understanding that there is a mercury advisory on a Hiwassee River impoundment in Georgia, well upstream of the Olin discharge, so we are not prepared to say that other watershed/atmospheric sources do not need to be addressed.

Comment F-78. *On Possum Creek (TN06020001062_1000) in Hamilton and Bledsoe counties, pH and iron should be added as causes of biological impacts. The source of these pollutants is abandoned mining.*

Response: We agree and will make this revision.

Comment F-79. *Rock harvesting has taken place along the Cumberland Trail in the Rock Creek and Soddy Creek watersheds. Has the Department monitored these streams and should they be listed?*

Response: TDEC shares the commenter's concern about rock harvesting along the Cumberland Trail and supports legislation to make our regulatory authority over this activity clearer. Rock harvesting became prevalent within these watersheds after the last watershed assessment was conducted; hence, the Division does not have recent water quality data available to make adequate assessments during this evaluation cycle.

Comment F-80. *Mackey Branch in Hamilton County is on the 303(d) List and has also been identified as a high quality water due to the presence of a listed species (Chickamauga crayfish). No more development should be allowed in this watershed until a TMDL has been developed.*

Response: The department shares the commenter's concern about water quality in Mackey Branch. However, the construction stormwater permit is not a land use planning mechanism to control development, but rather, a way to help ensure that construction activities do not impact water quality. The permit has provisions that require extra protection for silt impaired or high quality streams and as the commenter notes, Mackey Branch is both.

Comment F-81. *The draft identifies the source of pollutants to Big Brush Creek in Sequatchie County (TN06020004009 – 1000 & 2000) as being "surface mining." This assessment would be clearer if the source were identified as "coal mining discharges."*

Response: We will make this revision.

Comment F-82. *The draft identifies an Unnamed Tributary to Sequatchie River (TN06020004001_0600) as being impacted by pollutants from pasture grazing. The commenter suggests that septic tanks are a more likely source since there are no pastures on this stream.*

Response: The Division will accept the addition of septic systems as a possible source; however, assessment records identified pasture grazing occurring.

Comment F-83. *The draft identifies a Sweeten (Sweden) Creek as being impacted by pollutants from pasture grazing. The commenter suggests that septic tanks are a more likely source since this area is mostly cropland and houses.*

Response: Review of the assessment records supports the identification of pasture grazing as a source. Septic systems will be added as a possible additional source.

Comment F-84. *The draft identifies Patton Creek in Grundy Country as being impacted by pollutants from pasture grazing. The commenter observes that cattle have been fenced out of this stream.*

Response: The Division is currently monitoring Patton Creek in Grundy County and will reassess its status during the next assessment cycle.

Comment F-85. *When the Department issued mercury advisories at several locations in 2007, other streams were identified as being areas of concern where additional data were needed to determine whether or not the fish posed a direct human health threat. What is the status of the Sequatchie River?*

Response: TVA resampled their station at mile 6.3 in 2006. The 2006 largemouth bass composite sample measured 0.48 ppm mercury. (We did not have these results when the new 2007 fishing advisories were issued.)

Because the average level of mercury in largemouth bass in the lower Sequatchie River is above 0.3 ppm, we will add this section of the river to the 303(d) List as violating the mercury criterion. Atmospheric deposition will be identified as a source.

Comment F-86. *TVA sampled fish and benthic invertebrates at mile 240 of the Duck River and consider the data to indicate that the biological integrity criterion*

is being met. TVA feels that these data can be used to reduce the length of the impaired section below Normandy Dam.

Response: The data collected by TVA at mile 240 ((Three Forks Bridge) did look good. However, that station is only about a tenth of a mile upstream of the current downstream boundary of the impaired section, so we would be looking at a very small change in the current listing. (Segment TN06040002030_1000 currently extends from the mouth of Garrison Fork upstream to Normandy dam.)

We're not opposed to redefining this segment, but since the Duck River is a Group 3 watershed, we would prefer to wait until we reassess the entire watershed. Perhaps in the meantime, TVA could monitor an additional site or sites upstream of mile 240 to see if the improvements extend further toward the dam.

Comment F-87. *The department has been monitoring Coleman Branch, a tributary to Carters Creek near the Maury/Williamson County line. What is the status of this creek?*

Response: Due to excessive silt from a subdivision development, Coleman Branch (TN06040003034_0260) is being added to the 303(d) List. Enforcement action is being taken against the developer in this case.

Comment F-88. *On Quality Creek and Sugar Creek near Mt. Pleasant, the draft continues to identify abandoned mining as a source of silt in these streams. While phosphorus mining did occur in the 70s, these areas have been generally reclaimed.*

Response: We agree and will delete this source. The streams will need to remain listed for siltation until the water quality standard is met.

Comment F-89. *TVA and the U.S. Fish and Wildlife Survey are developing a plan to restore more natural flows and temperatures below Tims Ford Reservoir in order to assist in the reestablishment of listed species in the Elk River. Can the draft plan be used to identify impaired segment TN06030003015_1000 as 4B instead of Category 5 for temperature and Category 4C for flow?*

Response: The draft document in question (*Tims Ford Dam Release Water Quality Improvements, Franklin County, Tennessee*) was released for interagency and public review on April 25, well after the comment period ended for the draft 2008 303(d) List. Since the review period for the document has just begun and revisions may be made in the design of the plan, we would prefer to not postpone the development of a proposed final 303(d) List until this document

can be finalized. We would be happy to revisit this issue in the next cycle. (The Upper Elk River is a Group 2 watershed.) We do not think that EPA would approve Category 4B status on the basis of a draft document.

We also note that EPA has already approved placing flow alteration in this segment in Category 4C (pollution not caused by a pollutant). Since a flow TMDL is already not required for this segment, we wonder if it's beneficial to attempt to move it to a different category.

We will add a comment to this listing noting that this plan is being developed.

Comment F-90. *Anderson Creek (TN06030004026_0115) near the Giles/Lawrence County border, plus Fanny Branch and an unnamed tributary to Anderson Creek, are impacted by silt from off-road vehicle use. These segments should be added to the 2008 303(d) List.*

Response: We agree and will add these segments.

Comment F-91. *When the Department issued mercury advisories at multiple locations in 2007, several other streams were identified as being areas of concern where additional data were needed to determine whether or not the fish posed a direct human health threat. What is the status of the North Fork of the Forked Deer River?*

Response: The department resampled their station at mile 20.5 (at Old Hwy 104) in 2007. The largemouth bass composite sample measured 0.36 ppm mercury. (We did not have these results when the new 2007 fishing advisories were issued.)

Because the average level of mercury in largemouth bass in the lower North Fork Forked Deer River continues to be above 0.3 ppm, we will add this section of the river to the 303(d) List as violating the mercury criterion. Atmospheric deposition will be identified as a source.